



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/US97/19154 <b>(22) International Filing Date:</b> 17 October 1997 (17.10.97)  <b>(30) Priority Data:</b> 08/732,944 17 October 1996 (17.10.96) US 08/862,524 23 May 1997 (23.05.97) US  <b>(71) Applicant:</b> THE PROCTER & GAMBLE COMPANY [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US).  <b>(72) Inventors:</b> RABE, Thomas, Elliot; 743 West Hills Parkway, Baltimore, MD 21229 (US). DRECHSLER, Lee, Ellen; 3145 Bishop Street, Cincinnati, OH 45220 (US). SMITH, Edward, Dewey, III; 60880 Man-O-War Lane, Mason, OH 45040 (US). DOHMAE, Terutomo; 808-8-502, Tobo-otsu, Yasu-cho, Tasu-gun, Shiga 520-23 (JP). HINES, Christina; Apartment 413, 8282 Cambridge Road, Houston, TX 77054 (US).  <b>(74) Agents:</b> REED, T., David, et al.; The Procter & Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217 (US).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
<b>(54) Title:</b> COMPOSITIONS AND METHODS FOR IMPROVING THE PERFORMANCE OF LONG-WEARING COSMETIC PRODUCTS		
<b>(57) Abstract</b>  The invention is for compositions and method for using said compositions to improve the performance of a long-wearing cosmetic composition. The invention and its methods of use allows the user to significantly enhance the attributes of a long-wearing cosmetic composition without compromising its primary advantages.		

## COMPOSITIONS AND METHODS FOR IMPROVING THE PERFORMANCE OF LONG-WEARING COSMETIC PRODUCTS

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## TECHNICAL FIELD

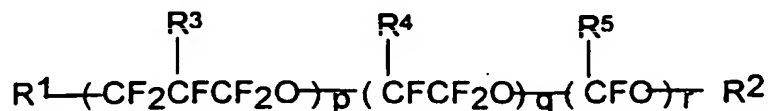
The invention is for compositions and method for using said compositions to improve the performance of long-wearing cosmetic products. These compositions and methods for using such compositions enable the user to significantly enhance the attributes of long-wearing cosmetic products without compromising their primary advantages.

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## BACKGROUND ART

Compositions used to enhance cosmetic products are known in the art. Such compositions include those that are applied over top compositions such as lipstick to provide attributes such as gloss, lubricity and transfer-resistance of the cosmetic product they are applied over. These enhancement products utilize a variety of polymeric fluids and film forming technologies. For example, acrylic film-formers that are incorporated in lipstick overcoat products such as CSI Incorporated's "Sealed with a Kiss" are delivered in a volatile vehicle, alcohol, which is spread over the lipstick surface.

Alternative topcoat products to those described above are disclosed in Japanese Patent Application Number HEI 5[1993]-221829, published August 31, 1993. Said overcoats are reputed to exhibit improved durability of makeup effect, suppression of color transfer, and improved applicability. Said topcoats comprise from 0.2 to 25% of silica powder and/or alumina powder and from 75% to 99.8% of a perfluoropolyether of general formula:



wherein  $R^1$  through  $R^5$  are independent fluorine atoms, perfluoroalkyl groups, or oxyperfluoroalkyl groups; the value of p, q, and r is at least zero; wherein the perfluoropolyether molecular weight is from about 500 to about 10,000, wherein P, Q and R may be equal, but, not zero. The preferred

be critical in predicting long wear is the ability of the cosmetic product to be flexible and resistant to solvents such as food oils once applied to the skin. Such cosmetic products are the subject matter of co-pending patent applications USSN 08/732,946 and USSN 08/732,948, "Transfer Resistant Cosmetic Compositions", Drechsler et al., both filed October 17, 1996; both incorporated herein by reference.

- 5 Such compositions comprise organosiloxane resins, fluid diorganosiloxane polymers, and a volatile carrier wherein the film formed upon application of the cosmetic product is substantially transfer-resistant and flexible wherein the cosmetic product has surprisingly increased wear.

The cosmetic products used in conjunction with the composition of the present invention have solubility parameters less than or equal to about  $8.5 \text{ (calories/cm}^3)^{1/2}$  on the Hildebrand scale.

- 10 In general, the solubility parameter is a function of the cohesive energy of the materials or the cosmetic product comprising said materials. Cohesive energy is simply an attractive force that is dependent on the electro-negativities of the atoms making up a molecule and serves as the basis for properties such as viscosity, adhesion, miscibility and even the boiling point. Some materials, like water, have high cohesive energy; some, like oil, have low cohesive energy. Highly cohesive  
15 ingredients are "polar", while those less cohesive are oily or "non-polar". Hildebrand developed a method for deriving the solubility parameter from the boiling point, molecular weight and specific gravity of a material; J.H. Hildebrand, J.M. Prausnitz and R.L. Scott, Regular and Related Solutions, New York; Van Nostrand Reinholdt (1950), herein incorporated by reference. This Hildebrand solubility parameter is published for many cosmetic and pharmaceutical materials in the Cosmetic  
20 Bench Reference, Carol Stream IL, Allured Publishing (1992) and in A.F. Barton, Handbook of Solubility Parameters and Other Cohesion Parameters, 2nd ed., Boca Raton; CRC Press (1992); both incorporated herein by reference.

The C log P value of the oils in said composition determines whether the composition of the present invention is sufficiently incompatible with the cosmetic product in order to improve the  
25 cosmetic products performance. The value P is the octanol/water partitioning coefficient of the oils comprising said composition. The octanol/water partitioning coefficient is the ratio between said compositions equilibrium concentration in octanol and in water. Since the values of the octanol/water partitioning coefficient are high, they are more conveniently given in the form of the logarithm to the base 10, or log P.

- 30 The log P values above are calculated using the "C log P" program available from Daylight CIS. This calculated logarithm of P is based on the fragment approach of Hansch and Leo (cf., A. Leo, in Comprehensive Medicinal Chemistry, Vol. 4, C. Hansch, P. G. Sammens, J. B. Taylor and C. A. Ransden, Eds., p. 295, Pergamon Press, 1990); incorporated herein by reference. The fragment approach is based on the chemical structure of each oil ingredient, and takes into account the numbers  
35 and types of atoms, the atom conductivity, and chemical bonding. The C log P values are the most reliable and widely used estimates for this physiochemical property.

Compositions of the present invention comprise oils and may take forms ranging from solid to

### Fats and Oils

Fats and oils useful in the present invention are triacylglycerides or triglycerides formed by an esterification reaction of fatty acids with glycerol. While the distinction between fats and oils is arbitrary, fats are typically considered solid or plastic at room temperature while oils are liquid under these same conditions. The fatty acids which are subsequently esterified to form triglyceride fats and oils are most usually derived from marine, animals and plant sources. For more information regarding triglyceride oils, their sources and processing, refer to Bailey, "Industrial Oil and Fats Products", Interscience Publications; incorporated herein by reference.

At least 90% of the ester substitution on the triglyceride backbone has carbon chain lengths of at least 12. The oils frequently are hydrogenated to some extent to deter rancidity. Such triglycerides include plant derived oils such as soy bean oil, castor bean oil, olive oil, sunflower oil, almond oil, peanut oil, canola oil, corn oil, other similarly related vegetable oils and mixtures thereof.

### Synthetic Polymer Oils

Synthetic polymer oils are useful in the present invention. Said synthetic polymer oils are liquid at room temperature and include glycerin/diethylene glycol/adipate crosspolymers, available as Lexorez 100 from Inolex Chemical Company.

### Optional Ingredients

There are a great number of other ingredients approved for use in the cosmetic art that may be used in compositions of the present invention. Such ingredients are those approved for use in cosmetics and can be found listed in reference books such as the CTFA Cosmetic Ingredient Handbook, Second Edition, The Cosmetic, Toiletries, and Fragrance Association, Inc. 1988, 1992. Said materials may be used provided their inclusion does not significantly disrupt the film formed once the cosmetic product has been applied to the skin. Said ingredients include waxes, fragrances, flavor oils, skin care ingredients such as sunscreen, emulsifiers and the like. Hypoallergenic compositions can be made into the present invention where said compositions do not contain fragrances, flavor oils, lanolin, sunscreens, particularly PABA, or other sensitizers and irritants. The additional ingredients that are added should not lower the aggregate C Log P values for the oils of the composition to less than 13.

As previously mentioned, oils are an important component of the present invention. In addition to said oils, other materials may be included to provide the product form desired by the consumer. Such forms include liquids, pastes, and solids. In the case of a solid form, the composition of the present invention comprises materials in a sufficient amount so as to form a stable stick. These materials are herein referred to as solid formers. Said solid formers are preferably used at levels from about 0.5% to about 35.0% more preferably from about 7.0% to about 25.0%, and most preferably from about 8% to about 20.0% of the composition. Said solid formers are selected from the group consisting of solid polyol fatty acid polyesters, waxes, solid oils and mixtures thereof.

#### a. Solid Polyol Polyesters

The solid polyol polyesters used in the present invention are polyol esters or polyesters

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Likewise, the long chain saturated fatty acid moieties can be used in combination with each other in all proportions. Mixed fatty acid moieties from source oils which contain substantial amounts of the desired unsaturated or saturated acids can be used as the acid moieties to prepare compounds for use herein. The mixed fatty acids from the oils should contain at least about 30%, preferably at least about 50%, and most preferably at least about 80% of the desired unsaturated or saturated acids. For example, rapeseed oil fatty acids or soybean oil fatty acids can be used instead of pure C12-C16 unsaturated fatty acids. Hardened, i.e. hydrogenated, high erucic rapeseed oil fatty acids can be used instead of pure C20-C22 saturated acids. Preferably the C20 and higher acids, or their derivatives, e.g. methyl or other low alkyl esters, are concentrated for example by distillation. The fatty acids from palm kernel oil or coconut oil can be used as a source of C8 to C12 acids. An example of the use of source oils to make solid polyol polyesters for use in the compositions herein is the preparation of solid sucrose polyester, employing the fatty acids of high oleic sunflower oil and substantially completely hydrogenated high erucic rapeseed oil. When sucrose is substantially completely esterified with a 1:3 by weight blend of the methyl esters of the fatty acids of these two oils, the resulting sucrose polyester will have a molar ratio of unsaturated C18 acid radicals to C20 and higher saturated acid radicals of about 1:1 and about 28.6 weight percent of the total fatty acids in the polyester will be C22 fatty acids.

The higher the proportions of the desired unsaturated and saturated acids in the fatty acid stocks used in making the solid polyol polyester, the more efficient the ester will be in its ability to bind with the liquid oils described hereinbelow.

Examples of solid polyol fatty acid polyesters for use in the composition herein include, but are not limited to, the octaester of raffinose in which the esterifying fatty acid moieties are linoleate and behenate in a 1:3 molar ratio; the heptaester of maltose wherein the esterifying fatty acid moieties are sunflower seed oil fatty acids and lignocerate in a 3:4 molar ratio; the octaester of sucrose wherein the esterifying fatty acid moieties are oleate and behenate in a 2:6 molar ratio; and the octaester of sucrose wherein the esterifying fatty acid moieties are laurate, linoleate and behenate in a 1:3:4 molar ratio. A preferred material is sucrose polyester in which the degree of esterification is 7-8, and in which the fatty acid moieties are C18 mono- and/or di-unsaturated and behenic, in a molar ratio of unsaturates:behenic of 1:7 to 3:5. A particularly preferred polyol ester is the octaester of sucrose in which there are about 7 behenic fatty acid moieties and about 1 oleic moiety in the molecule.

The solid fatty acid polyesters herein can be made according to prior art known methods for preparing polyesters of polyols. See, for example U.S. Patent No. 5,306,516, to Letton et al., issued April 26, 1994; U.S. Patent No. 5,306,515, to Letton et al., issued April 26, 1994; U.S. Patent No. 5,305,514, to Letton et al., issued April 26, 1994; U.S. Patent No. 4,797,300, to Jandacek et al., issued January 10, 1989; U.S. Patent No. 3,963,699, to Rizzi et al., issued June 15, 1976; U.S. Patent No. 4,518,772, to Volpenhein, issued May 21, 1985; and U.S. Patent No.

Technology of Waxes, Part 2, 1956, Reinhold Publishing; herein incorporated by reference. The waxes most useful herein have melting points from about 30°C to about 115°C and are selected from the C<sub>8</sub> to C<sub>50</sub> hydrocarbon waxes. Such waxes include long chained polymers of ethylene oxide combined with a dihydric alcohol, namely polyoxyethylene glycol. Such waxes include carbowax available from Carbide and Carbon Chemicals company. Other synthetic waxes include long-chained polymers of ethylene with OH or other stop length grouping at end of chain. Such waxes include the Fischer-Tropsch waxes as disclosed in the text disclosed above at pages 465-469 and include Rosswax, available from Ross company and PT-0602 available from Astor Wax Company. Additional synthetic waxes include the class of alkylated polyvinyl pyrrolidones or PVP, including tricontanyl PVP (available as Gannex WP-660 from ISP Company) and PVP/Eicosene Copolymer (available as from ISP Company).

Specific waxes useful in the present invention are selected from the group consisting of beeswax, lanolin wax, shellac wax (animal waxes); carnauba, candelilla, bayberry (vegetable waxes); ozokerite, ceresin, (mineral waxes); paraffin, microcrystalline waxes (petroleum waxes); polyethylene, (ethylenic polymers); polyethylene homopolymers (Fischer-Tropsch waxes); C<sub>24-45</sub> alkyl methicones (silicone waxes); and mixtures thereof. Most preferred are beeswax, lanolin wax, carnauba, candelilla, ozokerite, ceresin, paraffins, microcrystalline waxes, polyethylene, C<sub>24-45</sub> alkyl methicones, and mixtures thereof.

c. Solid Oils

Solid oils useful herein are those which have a melting point of above about 30°C to about 250°C, preferably from about 37°C to about 100°C, more preferably from about 37°C to about 80°C. As used herein the term "solid oils" refers to any oil or oil-like materials which are solids or semi-solids at temperatures of from about 20°C to about 25°C, and have a solubility in water of generally less than about 1% by weight at 25°C. Examples of suitable solid oils include, but are not limited to, petrolatum, highly branched hydrocarbons, fatty alcohols, fatty acid esters, vegetable oils, hydrogenated vegetable oils, polypropylene glycols, alpha-hydroxy fatty acids, fatty acids having from about 10 to about 40 carbon atoms, alkyl amides of di and/or tri-basic carboxylic acids, n-acyl amino acid derivatives, and mixtures thereof. Solid oils useful in the cosmetic composition of the present invention are further described in U.S. Patent No. 4,919,934, to Deckner et al., issued April 24 1990, which is incorporated herein by reference in its entirety.

Suitable highly branched hydrocarbons for use herein include hydrocarbon compounds having from about 17 to about 40 carbon atoms. Nonlimiting examples of these hydrocarbon compounds include squalane, cholesterol, lanolin, docosane (i.e. a C<sub>22</sub> hydrocarbon), and isoparaffins.

Vegetable oils and hydrogenated vegetable oils which are solid or semi-solid at ambient temperatures of from about 20°C to about 25°C are also useful herein. Examples of suitable vegetable oils and hydrogenated vegetable oils include butterfat, chicken fat, goose fat, horse fat,

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hydrophobic phases of lip compositions of this invention. Emulsifiers are also useful for incorporating polar fluids such as water, propylene glycol, glycerine or mixtures thereof. Such emulsifiers include those routinely used in cosmetics and are found in the CTFA. Polar fluids such as water, glycerine, propylene glycol and mixtures thereof may also be incorporated without an emulsifier when amphiphilic materials such as polyol fatty acid polyesters are used in the composition.

#### 4. Skin Care Active Ingredients

Skin care active ingredients in both water soluble and water insoluble forms can be added to the lip composition. Said ingredients include fat soluble vitamins, sunscreens and pharmaceutically active ingredients. These skin care active ingredients include glycerine, zinc oxide; chamomile oil; ginkgo biloba extract; pyroglutamic acid, salts or esters; sodium hyaluronate; 2-hydroxyoctanoic acid; sulfur; salicylic acid; carboxymethyl cysteine, and mixtures thereof.

#### EXAMPLES

Examples of compositions of the present invention are as follows:

##### Example 1.

15	<u>Ingredient</u>	<u>Weight(%)</u>
	SPE Cottonate	89.75
	SPE Behenate	5.05
	Sericite <sup>1</sup> 5.05	
	Propylparaben	0.10
20	Ethylene Brassylate	0.05

##### 1. Sericite available from U. S. Cosmetics Corporation

Combine all ingredients in a vessel and heat to 90°C while stirring constantly with a propeller mixer. When the SPE Behenate has completely melted and the mixture is homogeneous, remove from heat and cool to room temperature. The mixture should be stirred constantly during cooling. Transfer the resulting fluid to individual packages.

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## Example 5:

	<u>Ingredient</u>	<u>Weight (%)</u>
	Group A:	
	SEFA Cottonate	84.58
5	SEFA Behenate	14.36
	Ganex Wax WP-660 <sup>1</sup>	0.86
	Propylparaben	0.10
	BHT	0.05
	Group B:	
10	Ethylene Brassylate	0.05

1. Ganex Wax available from ISP Technologies, Inc.

Combine Group A ingredients together and mix well with a spatula. Heat the Group A mixture until all solids melt (approx. 90°C), stirring occasionally while heating. Add Group B ingredients and mix for 5 minutes with a propeller mixer. Do not let the temperature rise above 90°C. When the mixture of Groups A and B ingredients is homogeneous, pour the molten material into seasoned lipstick molds. Chill the filled molds at 5°C for approximately 20 minutes. Remove the molds to ambient conditions and de-mold sticks. Place sticks in lipstick cases.

## Example 6:

	<u>Ingredient</u>	<u>Weight (%)</u>
20	Group A:	
	SEFA Cottonate	70.67
	SEFA Behenate	14.13
	Talc	15.00
	Propylparaben	0.10
25	BHT	0.05
	Group B:	
	Ethylene Brassylate	0.05

Combine Group A ingredients together and mix well with a spatula. Heat the Group A mixture until all solids melt (approx. 90°C), stirring occasionally while heating. Add Group B ingredients and mix for 5 minutes with a propeller mixer. Do not let the temperature rise above 90°C. When the mixture of Groups A and B ingredients is homogeneous, pour the molten material into seasoned lipstick molds. Chill the filled molds at 5°C for approximately 20 minutes. Remove the molds to ambient conditions and de-mold sticks. Place sticks in lipstick cases.

## Example 7:

	<u>Ingredient</u>	<u>Weight (%)</u>
35	Group A:	
	SEFA Cottonate	83.17



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	SEFA Behenate	12.50
	Talc	7.50
	Propylparaben	0.15
	Vitamin E Linoleate	0.10
5	Group B:	
	Water	10.00
	Propylene Glycol	5.00
	Glycerin	5.00
	Methylparaben	0.15
10	Group C:	
	Ethylene Brassylate	0.05

- Combine Group A ingredients together and mix well with a spatula. Heat the Group A mixture until all solids melt (approx. 90°C), stirring occasionally while heating. Combine Group B ingredients together and mix well with a spatula. Heat the Group B mixture to approximately 90 °C. Combine Group A and Group B mixtures and homogenize for 2 minutes at 5000 rpm. Add Group C ingredients and mix for 5 minutes with a propeller mixer. When the mixture is homogeneous, pour the molten material into seasoned lipstick molds. Chill the filled molds at 5°C for approximately 20 minutes. Remove the molds to ambient conditions and de-mold sticks. Place sticks in lipstick cases.

## 20 Example 10:

	<u>Ingredient</u>	<u>Weight (%)</u>
	Group A:	
	SEFA Cottonate	85.85
	SEFA Behenate	14.00
25	Propylparaben	0.10
	Group B:	
	Ethylene Brassylate	0.05

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- Combine Group A ingredients together and mix well with a spatula. Heat the Group A mixture until all solids melt (approx. 90°C), stirring occasionally while heating. Add Group B ingredients and mix for 5 minutes with a propeller mixer. Do not let the temperature rise above 90°C. When the mixture of Groups A and B ingredients is homogeneous, pour the molten material into individual containers. Allow to cool to ambient conditions.

## Example 13

	<u>Ingredient</u>	<u>Weight(%)</u>
	Group A	
	SEFA Cottonate	89.00
10	Candelilla Wax	3.00
	Ozokerite	1.00
	Microcrystalline Wax	1.50
	Beeswax	5.30
	Group B:	
15	BHT	0.05
	Ethylene Brassylate	0.05
	Propylparaben	0.10

- Combine Group A ingredients together and mix well with a spatula. Heat the Group A mixture until all solids melt (approx. 90°C), stirring occasionally while heating. Add Group B ingredients and mix for 5 minutes with a propeller mixer. Do not let the temperature rise above 90°C. When the mixture of Groups A and B ingredients is homogeneous, pour the molten material into seasoned lipstick molds. Chill the filled molds at 5°C for approximately 20 minutes. Remove the molds to ambient conditions and de-mold sticks. Place sticks in lipstick cases.

## Example 14

	<u>Ingredient</u>	<u>Weight(%)</u>
	Group A:	
	SEFA Cottonate	88.00
	Ozokerite	6.00
	Beeswax	5.80
30	Group B:	
	BHT	0.05
	Ethylene Brassylate	0.05
	Propylparaben	0.10

- Combine Group A ingredients together and mix well with a spatula. Heat the Group A mixture until all solids melt (approx. 90°C), stirring occasionally while heating. Add Group B ingredients and mix for 5 minutes with a propeller mixer. Do not let the temperature rise above 90°C. When the mixture of Groups A and B ingredients is homogeneous, pour the molten material

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## Example 1: Lip Cosmetic Product

	<u>Ingredients</u>	<u>Weight(%)</u>
	Group A:	
	Silicone Gum <sup>1</sup>	12.60
5	Isododecane <sup>2</sup>	12.60
	Group B:	
	Isododecane <sup>2</sup>	43.38
	Bentonite Clay <sup>4</sup>	1.00
	Propylene Carbonate	0.32
10	Red #6 Calcium Lake	1.00
	Red #7 Barium Lake	3.00
	Titanium Dioxide	1.50
	Mica	2.20
	Organosiloxane resin <sup>3</sup>	22.40
15	1. 2,500,000 cSt Dimethicone Gum available as SE 63 from General Electric.	
	2. Permethyl 99A available from Permethyl Corp.	
	3. MQ Resin (0.7:1 ratio M:Q) available as 1170-002 from General Electric.	
	4. Bentone 38 available from Rheox.	

- Combine Group A ingredients together in a beaker and mix with a propeller mixer until uniform. Combine all Group B ingredients except the propylene carbonate and hand-mix to roughly incorporate the dry powders. Homogenize the entire formulation using a Ross ME 100 LC homogenizer at about 7500 rpm until all pigments are fully dispersed. Next, while continuing the homogenization process, slowly add the propylene carbonate until mixture thickens. Combine Group A mixture with Group B mixture in a beaker and mix with a propeller mixer until uniform.
- Transfer the resulting fluid to individual packages.

## Example 2: Liquid Foundation Cosmetic Product

	<u>Ingredient</u>	<u>Weight (%)</u>
	Group A:	
	Organosiloxane Resin <sup>1</sup>	4.48
30	Cyclomethicone <sup>2</sup>	11.11
	Silicone-polyether Emulsifier <sup>3</sup>	10.00
	Group B:	
	Silicone-Treated Titanium Dioxide	6.50
	Silicone-Treated Yellow Iron Oxide	0.28
35	Silicone-Treated Red Iron Oxide	0.15
	Silicone-Treated Black Iron Oxide	0.06

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3. Silicone-Polyether Emulsifier available as DC3225C from Dow Corning.

4. Dimethicone Gum (2,500,000 cSt) available as SE63 from General Electric.

Combine Group A and Group B ingredients together and homogenize at 9500 rpm for 15 minutes. Add Group C ingredients and homogenize at 2000 rpm for 2 minutes. Combine Group D ingredients in a separate container and mix with a propeller mixer until a clear solution forms. Add the Group D solution to the mixture of Groups A, B, and C very slowly while homogenizing at 2000 rpm. When all of the Group D solution has been incorporated, homogenize the entire mixture at 2000 rpm for an additional 10 minutes. Finally, homogenize the entire mixture at 5000 rpm for 5 minutes. Transfer the resulting fluid to individual packages.

10 Example 4: Shear Lip Tint Cosmetic Product

	<u>Ingredients</u>	<u>Weight(%)</u>
	Group A:	
	Silicone Gum <sup>1</sup>	11.88
	Isododecane <sup>2</sup>	54.45
15	Group B:	
	Organosiloxane resin <sup>3</sup>	20.78
	Red #6 Calcium Lake	0.50
	Red #7 Barium Lake	0.50
	Gemtone Sunstone <sup>5</sup>	0.50
20	Timiron MP-115 Pearl <sup>6</sup>	0.50
	Bentone Gel <sup>4</sup>	10.89

1. 2,500,000 cSt Dimethicone Gum available as SE 63 from General Electric.

2. Permethyl 99A available from Permethyl Corp.

3. MQ Resin (0.7:1 ratio M:Q) available as 1170-002 from General Electric.

25 4. VS-5 PC available from Rheox.

5. Gemtone Sunstone available from Mearl Corporation.

6. Timiron MP-115 Pearl available from Mearl Corporation.

Combine Group A ingredients together in a beaker and mix with a propeller mixer until uniform. Add Group B ingredients to the Group A mixture and hand-mix to roughly incorporate the dry powders. Homogenize the entire formulation until all pigments are fully dispersed. Transfer the resulting fluid to individual packages.

Example 5: Liquid Eye Liner Cosmetic Product

	<u>Ingredient</u>	<u>Weight (%)</u>
	Group A:	
35	Organosiloxane Resin <sup>1</sup>	8.90
	Isododecane <sup>2</sup>	14.90
	Group B:	

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## Group D:

Isododecane <sup>2</sup>	10.00
Trihydroxystearin	2.00

1. MQ Resin (0.7:1 ratio M:Q) available as 1170-002 from General Electric.

5 2. Permethyl 99A available from Permethyl Corp.

3. Dimethicone Fluid (1,000 cSt) available from General Electric.

Combine Group A ingredients together and mix with a propeller mixer until uniform. Add Group B ingredients and homogenize until pigments are fully dispersed. Premix Group C ingredients in a separate container using a propeller mixer until uniform, then combine with the mixture of Groups A and B ingredients. Premix Group D ingredients with heating to about 10 57-60°C for about 3 minutes. Remove from the heat and homogenize for approximately 5 minutes or until a gel develops. Finally, add the Group D mixture to the rest of the batch and heat the entire mixture to 57-60 °C for about 7-10 minutes while mixing with a propeller mixer. Remove the batch from the heat and allow it to cool to room temperature while mixing with a propeller mixer. Transfer 15 the resulting fluid to individual packages.

## METHOD FOR IMPROVING COSMETIC PRODUCTS

The present invention covers a method of improving transfer resistant, flexible film-forming cosmetic product wherein said method comprises the steps of:

- a. applying a transfer resistant, flexible film-forming cosmetic product to the skin
- 20 wherein said cosmetic product has a solubility parameter less than or equal to 8.5 (calories /cm<sup>3</sup>)<sup>1/2</sup>;
- b. allowing said cosmetic product to dry; and
- c. applying over said cosmetic product a second composition wherein said composition comprises an oil having a C log P value greater than or equal to 13.

25 The user applies both the cosmetic product and the composition of the present invention from a suitable cosmetic applicator. Applicators useful for fluid products include a liquid pen package disclosed in British Patent 21198037, issued 5/09/90, assigned to Mitsubishi Pencil Co., Ltd. of Japan.

Another such cosmetic dispenser is a unidirectional twist-up dispensing device with incremental dosing as disclosed in co-pending patent application USSN 08/738,129, "Simplified 30 Unidirectional Twist-Up Dispensing Device with Incremental Dosing", Horstman et al., filed 10/25/96 to Procter and Gamble. Such a twist-up dispensing device can include a hollow housing defining a chamber having an open dispensing end and a piston located within the chamber being limited to translational movement within the chamber. The piston preferably having a threaded rod extending therefrom that engages with a threaded aperture in an actuator such that advancement of the piston 35 toward the dispensing end occurs when the actuator is rotated. Rotation of the actuator causes the product to be dispensed from the dispensing end. An applicator is preferably attached to the dispensing end of the housing in fluid communication with the chamber wherein the product is dispensed through

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## WHAT IS CLAIMED IS:

1. Compositions for improving the performance of transfer resistant, flexible film-forming cosmetic products having a solubility parameter less than or equal to  $8.5 \text{ (calories /cm}^3)^{1/2}$  wherein the composition comprises oils having a C log P value of 13 or greater and a solid former.
2. The compositions according to claim 1 wherein the compositions comprise from 0.5% to 35.0% of a solid former selected from the group consisting of polyol fatty acid polyesters, waxes, solid oils and mixtures thereof.
3. The compositions according to claims 1 and 2 wherein the solid former is a wax selected from the group consisting of animal waxes; vegetable waxes; mineral waxes; various fractions of natural waxes; synthetic waxes, preferably synthetic waxes having a melting points from  $30^{\circ}\text{C}$  to  $115^{\circ}\text{C}$  selected from  $\text{C}_8$  to  $\text{C}_{50}$  hydrocarbon waxes, alkylated polyvinyl pyrrolidones, long-chained polymers of ethylene with OH or other stop length grouping at end of chain; petroleum waxes; ethylenic polymers; hydrocarbon types such as Fischer-Tropsch waxes; silicone waxes; and mixtures thereof wherein the waxes have a melting point greater than or equal to  $25^{\circ}\text{C}$ .
4. The compositions according to claim 1 through 3 wherein the wax is selected from the group consisting of beeswax, lanolin wax, shellac wax, carnauba, candelilla, bayberry, ozokerite, ceresin, paraffin, microcrystalline waxes, polyethylene, polyethylene homopolymers,  $\text{C}_{24-45}$  alkyl methicones and mixtures thereof.
5. The compositions according to claim 1 through 4 wherein the solid former is a solid polyol polyesters comprising polyol esters and polyesters, preferably polyols that are sugars selected from the group consisting of monosaccharides, disaccharides and trisaccharides, containing from 4 to 11 hydroxyl groups; wherein the fatty acid ester groups of the polyester comprise a combination of:  
(a) long chain unsaturated fatty acid moieties or a mixture of long chain unsaturated fatty acid moieties and short chain saturated fatty acid moieties, and  
(b) long chain saturated fatty acid moieties, preferably wherein the at least 30% by weight of the total fatty acid moieties of the polyesters are  $\text{C}_{20}$  or higher

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 97/19154

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 6 A61K7/48

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 38 37 473 A (A.W.FABER-CASTELL) 10 May 1990 see claims 1-7 see page 2, line 3-7 see page 3, line 13-19 ---	1-4,6-9
X	DE 40 25 040 A (KA0) 14 February 1991 see claims 1-4 see page 2, line 42-64 see page 3, line 7-14 see example 1 ---	1-4,6,8
X	PATENT ABSTRACTS OF JAPAN vol. 13, no. 24 (C-561) '3372! , 19 January 1989 & JP 63 230618 A (KA0), 27 September 1988, see abstract ---	1-4,8
-/--		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search

11 March 1998

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# INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 97/19154

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3837473 A	10-05-90	NONE	
DE 4025040 A	14-02-91	JP 3068505 A CA 2022851 A FR 2650835 A US 5106625 A	25-03-91 10-02-91 15-02-91 21-04-92
EP 519727 A	23-12-92	AU 1829992 A CA 2071365 A JP 5194138 A ZA 9204533 A	24-12-92 22-12-92 03-08-93 20-12-93
WO 9717057 A	15-05-97	AU 7476096 A AU 7476196 A AU 7522096 A WO 9717058 A WO 9717059 A	29-05-97 29-05-97 29-05-97 15-05-97 15-05-97